

WHAT IS CLAIMED IS:

1. A chrome-free passivating solution, characterized in that said chrome-free passivating solution comprises the following components:

effective amount of oxysalt containing transition metal,

5 inorganic acids; and

water;

wherein said oxysalt containing transition metal is selected from a group consisting of oxysalt containing titanium, oxysalt containing zirconium, oxysalt containing hafnium, oxysalt containing vanadium, oxysalt containing niobium,
10 oxysalt containing tantalum, oxysalt containing molybdenum, oxysalt containing tungsten, oxysalt containing manganese, oxysalt containing technetium, and oxysalt containing rhenium, and

the weight ratio between said oxysalt containing transition metal and inorganic acids is in the range of 200~400:1.

15 2. The chrome-free passivating solution as claimed in claim 1, characterized in that said chrome-free passivating solution further comprises a complexing agent.

3. The chrome-free passivating solution as claimed in claim 1, characterized in that said oxysalt containing transition metal is at least one or two
20 selected from a group consisting of oxysalt containing titanium, oxysalt containing manganese, oxysalt containing molybdenum, oxysalt containing zirconium and oxysalt containing vanadium.

4. The chrome-free passivating solution as claimed in claim 3, characterized in that said oxysalt containing transition metal is a mixture of two

salts, and a weight ratio between the two salts is in the range of 35~45:1.

5. The chrome-free passivating solution as claimed in claim 1, characterized in that the inorganic acid is one or more selected from sulfuric acid, nitric acid, and hydrochloric acid.

5 6. The chrome-free passivating solution as claimed in claim 5, characterized in that the inorganic acids are two selected from a group consisting of sulfuric acid, nitric acid, and hydrochloric acid, and the weight ratio between the two inorganic acid is 7~10:1.

 7. The chrome-free passivating solution as claimed in claim 1 or 2,
10 characterized in that the pH value of said chrome-free passivating solution is 1~3.

 8. The chrome-free passivating solution as claimed in claim 1 or 2, characterized in that said chrome-free passivating solution further comprises one or more kinds of silicates.

15 9. The chrome-free passivating solution as claimed in claim 8, characterized in that said silicate is sodium silicate, potassium silicate or ammonium silicate.

 10. The chrome-free passivating solution as claimed in claim 8, characterized in that the weight ratio between the oxysalt containing transition
20 metal and the silicates is 35~45:1.

 11. The chrome-free passivating solution as claimed in claim 2, characterized in that the complexing agent is organic acid or peroxide.

 12. The chrome-free passivating solution as claimed in claim 2, characterized in that said organic acid is one or more selected from a group

consisting of citric acid, tartaric acid, pyrophosphate acid, nitrilotriacetic acid, ethylene diamine tetramethyl phosphoric acid (EPTMP), sulfonamic acid, carboxyl acetic acid, ethylene diamine tetraacetic acid(EDTA), hydroxy-ethylidene diphosphonate (HEDP), 2-hydroxy phosphonoacetic acid ,

5 1-hydroxy -2-naphthoic acid, diethylidene-triamine pentamethylene phosphonic(DTPMP), 1-hydroxy-2-(3-pyridyl) ethane-1,1-diphosphonic, hydroxyl-propylidene-1,1-diphosphonic(HPDP), 2-hydroxy phosphonoacetic acid (HPAA), 1-hydroxy butylidene -1,1-diphosphonic acid (HBDP), 1-hydroxy-ethylidene-1,1-diphosphonic acid (HDEP),

10 1-hydroxy-hydroxy-diphosphonic acid.

13. The chrome-free passivating solution as claimed in claim 12, characterized in that the complexing agent is a mixture of three organic acids, and the weight ratio of the three organic acids is 6:5:1.

14. The chrome-free passivating solution as claimed in claim 12,

15 characterized in that the complexing agent is a mixture of two organic acids and peroxide, and the weight ratio of the two organic acids and peroxide is 6:5:1.

15. The chrome-free passivating solution as claimed in claim 1 or 2, characterized in that each liter of passivating solution contains the following components:

20	oxysalts containing transition metal	20~35g
	complexing agent	18~38g
	inorganic acid	0.05~0.15g
	water	remains

16. The chrome-free passivating solution as claimed in claim 15,

characterized in that oxysalts containing transition metal are replaced with a mixture of said salt and silicate.